(TMI Journal, Vol. II, Nos. 1 & 2, Winter-Spring 2010)

SINGLE-SUBJECT CASE STUDY OF TRAUMATIC BRAIN INJURY AND HEMI-SYNC®

by Linda Leblanc

Since her first visit to TMI in 1994 for the GATEWAY VOYAGE®, Linda Leblanc has returned regularly and has attended at least ten residential programs. She is a professional member and a residential and OUTREACH trainer, facilitating workshops in Cyprus since her accreditation in 2000. With her husband, John Knowles, in 1999 she established a not-for-profit organization, Psychognosia, to disseminate information on parapsychology and consciousness research. She also coauthored with John the Reincarnation Cards and the companion book, Awakening Far Memory, in 2007. The cards were beautifully illustrated by TMI trainer Patricia Peters (now, Patty Ray Avalon). Linda made history in December 2006 as the first foreigner elected to Cypriot public office and as the first female councillor in Peyia, Cyprus. Moving into a new, high-profile area of influence has provided Linda with even more opportunities to spread the word about Hemi-Sync®.

Abstract

Traumatic brain injury (TBI) usually requires lifelong support and therapy. Loss of memory and poor concentration reduce the ability to live a normal life. Patients often suffer from psychological and emotional effects and treatment is expensive, generally including both drugs and cognitive therapy. Four decades of reports by users of the Hemi-Sync binaural-beat sound technology indicate that Hemi-Sync may elicit changes in states of consciousness and result in improvements in physical, psychological, and emotional well-being. The technology could provide a noninvasive, inexpensive, easy-to-use, patient-controlled therapy for TBI.

This small study documents the results of Hemi-Sync use in a single case of old TBI. Over eight months, the subject listened to a variety of Hemi-Sync CDs every day, some musical and some with verbal guidance. She self-monitored general well-being and mental and physical aspects, and she periodically tested herself using the University of Amsterdam National Memory Test online. The memory test showed some encouraging results. The subject reported a definite positive effect on general well-being. She felt less tired and more relaxed and effective on her own, concluding that Hemi-Sync had helped her. To date, there are no clinical studies on Hemi-Sync and brain trauma. It is hoped that this positive result may stimulate more formal research.

Key Words: Hemi-Sync, binaural beats, frequencies, traumatic brain injury, brain waves, memory, well-being

Introduction

This case study was inspired by a pilot study on TBI conducted by Professional Member Signe Klepp, OT. 1

Traumatic brain injury (TBI) is a growing health problem, due to traffic accidents and war injuries. Rehabilitation is a costly and lengthy process that rarely results in full recovery. Patients often require lifelong therapy and suffer from psychological and emotional after-effects. They lack confidence and have difficulty in leading independent lives. There is a need for effective, noninvasive, patient-controlled therapies to assist them to adjust and to enhance quality of life and well-being.

Robert Monroe, the founder of The Monroe Institute® (TMI), developed Hemi-Sync, a binaural-beat technology he embedded in music and verbally guided exercises. Over four decades of research and anecdotal evidence show that Hemi-Sync may heighten awareness, enhance memory and concentration, induce deep relaxation, and alter states of consciousness.2

At my EXCURSION workshop held in Cyprus in November 2007, one participant—a fluent English-speaking female Dutch national, born in 1967—presented with a history of severe brain trauma from a car accident in April 1996. The two-day *EXCURSION* course introduces Hemi-Sync sound technology, which facilitates synchronizing the left and right hemispheres of the brain, enabling listeners to accomplish goals by achieving a focused, productive, coherent mind-brain state. Participants experience firsthand beneficial deep relaxation and greater levels of creativity and self-awareness. They explore various states of heightened and expanded consciousness and also learn techniques for overcoming fears and solving problems, as well as how to use these practical tools in daily life.

The subject experienced some dramatic effects during the course. She suddenly recalled/glimpsed life events before the accident that she had forgotten and felt strong physical sensations in her brain. She was intrigued and eager to continue with Hemi-Sync. She is able to express herself eloquently and is very diligent and well organized in recording her experiences, making her an ideal subject. She holds a master's degree in applied social psychology (Tilburg University in the Netherlands). Before the accident, she worked as a psychologist with health organizations and had experience in the design and methodology of research projects.

Patient's Condition and Earlier Treatment

She has not been able to work since the accident in 1996 and receives disability payments from the Dutch government. Her official diagnosis is: "Cerebral contusion with organic psycho syndrome, cognitive function disability and anamnesis. Skull-fracture front-temporal left and orbita left; EEG dated 10 May 1996: mild to moderate diffuse aspecific anomalies and

subcortical disturbances. Also, a small left-rostally localised dysfunction" (translated from the Dutch). She was in a coma for six days and had post-traumatic amnesia of three weeks, which is indicative for severe brain trauma.

The participant has extensive medical documentation of her severe brain trauma, due to periodic testing by Dutch health institutions. Medical reports by neurologists in 1998 and 1999, and by a doctor of the medical insurance company in 2005 with respect to the labor disability judgment, all confirm that her brain injuries persist and that she is in the 80-100 percent disability category for work.

Current Symptoms

She still suffers memory loss from the time of the accident and has problems with recall of her life in general. The subject exhibits short-term memory loss, impaired concentration/attention, slower thinking, difficulties with multitasking, quick fatigue, impaired left-side reflexes, limited hearing in the left ear with occasional balance problems, and double vision when fatigued. Depth perception is decreased and speech articulation is poor. Despite these difficulties, she has an active life—studying Greek and astrology, meditating with a group, posing as a nude life model for artists, traveling, and attending concerts and exhibitions.

Methodology

The author met seven times with the subject over the duration of the study to provide advice on Hemi-Sync use and to discuss reactions. It was emphasized at the outset that an attitude of "no expectations" of any particular results and an openness to the technology would facilitate the process. The subject listened to various CDs almost daily over an eight-month period from December 2007 to July 2008, sometimes five or six times per day, with most of the listening taking place in her home in Cyprus. Generally, she used the CDs a minimum of five times per week, with a maximum of up to thirty times per week. The only exception was one week when she listened once to MIND FOOD® *Catnapper* when she was traveling.

Eighteen different CDs were supplied for the project. The exercises fell into three categories: MIND FOOD®, HUMAN PLUS, and METAMUSIC®. MIND FOOD provides the experience or benefit while listening. HUMAN PLUS contains verbal guidance and Function Command cues to allow the listener to re-create the effect whenever she chooses. METAMUSIC contains specially blended binaural-beat frequencies embedded beneath the music to guide the listener into beneficial states of consciousness. Many titles feature blends of alpha, delta, and theta frequencies to support relaxation. Some selections use predominantly beta frequencies for focus and concentration or delta frequencies for sleep enhancement.

METAMUSIC selections used to enhance concentration were *Remembrance, Baroque Garden, Einstein's Dream, Seasons at Roberts Mountain, Indigo,* and *Lightfall.* MIND FOOD Concen*t*ration, which has a pink-noise background, was also employed.

METAMUSIC *Sleeping through the Rain* was used for sleep support, along with MIND FOOD *Catnapper* for short naps. MIND FOOD Surf and METAMUSIC *Mystic Realms* provided opportunities for relaxation, inner reflection, creativity, and inspiration.

The subject leveraged an array of HUMAN PLUS exercises: *Attention, Brain Support and Maintenance, Imprint,* and *Think Fast* to enhance concentration, develop memory skills, and support mental clarity. H-PLUS® *Let Go* was helpful for releasing emotional reactions and patterns. MIND FOOD *Retain-Recall-Release* was added for its easy technique to enhance memory.

One series, SUPPORT FOR STROKE RECOVERY, is designed to enable listeners to participate actively in their body's own healing process. The series utilizes relaxation, affirmations, and specific imagery to assist in rediscovering the body's innate healing abilities and for restoring balance.

Results were monitored by self-reporting and by a series of standard memory tests taken several times over the course of the study.

Self-Reporting

The subject wrote fifty pages of meticulous, detailed notes during the thirty-three-week project. Her journals documented the circumstances and results of each session, noting the date, the CD, her experience while listening, her experiences during the rest of the day, and whether she was sitting or lying down. She self-monitored general well-being, mental and physical aspects, and improvements in memory and concentration. Physical aspects included sensations she experienced during sessions—particularly the location in the brain where she felt changes—as well as energy level, sleepiness, fatigue, balance, and visual acuity. The speed of information processing, focus, impulse control, and degree of quietness of mind were also noted.

University of Amsterdam National Memory Test

The subject tested herself periodically with the online National Memory Test developed by the Psychology Department of the University of Amsterdam. Test results are used for research on memory—including Alzheimer's disease and how human beings store information. It takes about an hour to perform the test. The subject took the test on five separate occasions: December 24, 2007; January 30, 2008; March 9, 2008; June 3, 2008; and July 17, 2008.

The National Memory Test comprises nine individual tests:

Corsi's blocks test. Nine blocks are shown and change color in succession. The purpose is to recall the blocks' sequence of lighting up, then click the blocks in the proper sequence. The sequence becomes longer when more blocks are recalled in the proper order.

Pattern memory. Half the squares on a board change color. A short time is allowed to memorize which squares have changed. Board size increases with correct answers.

Ten-words test. Ten words are offered and are visible for a few seconds. The purpose is to recall as many words as possible. Another task is offered in between, after which one has to type the recalled words. The list is repeated three times.

Digit span test. Numbers are shown in succession. The order of the offered numbers has to be recalled, followed by clicking the successive numbers in their proper order.

Words list. Twelve words are offered every time with each word being visible for 1.5 seconds. At the end, all words that are recalled are typed in. There are four different lists in total.

Color memory. Color and spatial memory are tested. The goal is to find all color pairs with as few clicks as possible. The test is repeated three times; color pairs are invariant.

Word list recognition test. The "words list" test was performed earlier. In this recognition test, seven words are offered with the goal of recognizing and choosing those words that appeared in the previous "words list" test.

Story test. Ten sentences are offered within a short story framework. Each sentence is offered for five seconds. This is followed by a nonrelated task, after which different sentences are offered. The purpose is to indicate whether these sentences are **literally** the same as the ones offered previously.

Visual span test. A sequence of pictures is shown that have to be recalled. Then, the pictures must be clicked in the original sequence that they were offered.

The first two sessions covered six tests. The last three sessions included additional memory test segments.

Test results from National Memory Test of University of Amsterdam

Test no. & date	Scores	Ten-words test	Story test	Digit span test	Corsi's blocks test	Words list	Pattern memory	Visual span test	Word list recogni-tion test	Color memory
1 (12-24-2007)	Test score	19	6	17	5	35	191			
	% total	41.38	38.09	76.64	59.15	75.39	47.38			
2 (1-30-2008)	Test score			18	4	38	187			
	% total			83.17	8.56	86.52	38.99			
3 (3-9-2008)	Test score		8		5	36	256	4	72	107
	% total		86.69		59.38	79.53	77.29	45.71	63.37	34.11
4 (6-3-2008)	Test score	27	6	20	6	35	195	4	82	153
	% total	91.95	39.10	90.75	94.87	75.55	61.09	45.77	95.39	10.34
5 (7-17-2008)	Test score	22	7	17	5	37	263	6	76	88
	% total	62.7	65.47	76.81	59.29	83.38	84.64	60.29	80.64	53.70

Data Summary of University of Amsterdam Memory Test

Test results were variable, with some indicating improvement, others showing a decline, some having constant results, and others showing strong improvement. Positive effects are reflected in better scores in the story test, words list test, pattern memory test, and visual span test on June 3 and July 17, 2008. Generally, the results were positive and encouraging, although further testing is needed before drawing any firm conclusions.

Results of Self-Reporting

The subject reported a definite impact on general well-being. She felt less tired, more relaxed, and more effective on her own. She asserted that the “relaxation effect is absolutely significant.”

She felt a clear relation between listening to Hemi-Sync (especially *Concentration*) in the evening and getting up earlier and refreshed the next morning. The quality of her sleep improved and she required less sleep. She became more active and did not feel so tired later in the day. Problems with balance and vision were reduced a little.

The subject felt more relaxed about planning and setting priorities for the day. While she could work more coherently at home, she was still distracted by outside sounds while in the company of others and found it difficult to quickly digest a lot of information.

Although a small setback occurred when the subject had a car accident, she reported that listening to Hemi-Sync was a great help in coping with the event.

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